We claim:

1-11. (CANCELLED)

12. (CURRENTLY AMENDED) An assembly comprising:
a heat-generating device attached to a printed circuit board (PCB), and a thermal management system, the thermal management system comprising a heat sink having an interior lumen, the heat sink being separate from the PCB, and a coolant circulation channel loop, wherein ~~one~~ a first part of the loop is formed as a channel in a layer of the PCB, and the coolant circulation channel loop being in communication with the heat sink lumen, wherein a second part of the loop is formed by said interior lumen, wherein the PCB is a multi-layer PCB, and wherein a portion of the channel is formed by removal of portions of one or more layers of the PCB.

13. (CANCELED)

14. (PREVIOUSLY PRESENTED) The assembly of claim 12, further comprising a pump arranged for circulating a coolant through the channel wherein the pump is separate from the PCB.

15. (CANCELED)

16. (CURRENTLY AMENDED) The assembly of claim 12, ~~wherein the PCB is a multi-layer PCB, and~~ wherein a portion of the channel is formed by coinciding vias located in adjacent layers of the PCB.

17. (ORIGINAL) The assembly of claim 12, wherein the channel carries a gas coolant.

18. (ORIGINAL) The assembly of claim 12, wherein the channel carries a liquid coolant.

19. (PREVIOUSLY PRESENTED) The assembly of claim 12, wherein the channel comprises walls defining the channel and one wall of a portion of the channel is formed by a

surface of the device, so as to provide direct contact between the device and a coolant carried in the channel.

20. (ORIGINAL) The assembly of claim 19, wherein the device comprises a transistor die attached to a mounting flange, the mounting flange attached to the PCB mounting area and comprising the surface forming the respective portion of the channel.

21. (ORIGINAL) The assembly of claim 12, wherein the device comprises a transistor die attached to the PCB mounting area.

22. (ORIGINAL) The assembly of claim 19, wherein the device comprises a transistor die attached to the PCB mounting area, the transistor die comprising the surface forming the respective portion of the channel.

23. (ORIGINAL) The assembly of claim 12, the PCB comprising a plurality of device mounting areas for attaching heat producing devices, the cooling channel having a portion in a vicinity of each mounting area.

24. (CURRENTLY AMENDED) An assembly comprising:
a heat-generating device attached to a multi-layer printed circuit board (PCB), and a thermal management system, the thermal management system comprising a heat sink having an interior lumen, the heat sink being separate from the PCB, and a coolant circulation channel at least partially formed in a layer of the PCB, the coolant circulation channel being in communication with the heat sink lumen, and a pump arranged separately from the PCB for circulating a coolant through the channel, wherein the interior lumen forms another portion of the coolant circulation channel.

25. (CANCELED)

26. (PREVIOUSLY PRESENTED) The assembly of claim 24, wherein a portion of the channel is formed by removal of portions of one or more layers of the multi-layer PCB.

27. (PREVIOUSLY PRESENTED) The assembly of claim 24, wherein a portion of the channel is formed by coinciding vias located in adjacent layers of the multi-layer PCB.

28. (PREVIOUSLY PRESENTED) The assembly of claim 24, wherein the channel carries a gas coolant.

29. (PREVIOUSLY PRESENTED) The assembly of claim 24, wherein the channel carries a liquid coolant.

30. (PREVIOUSLY PRESENTED) The assembly of claim 24, wherein the channel comprises walls defining the channel and one wall of a portion of the channel is formed by a surface of the device, so as to provide direct contact between the device and a coolant carried in the channel.

31. (PREVIOUSLY PRESENTED) The assembly of claim 24, wherein the device comprises a transistor die attached to a mounting flange, the mounting flange attached to the PCB mounting area and comprising the surface forming the respective portion of the channel.

32. (PREVIOUSLY PRESENTED) The assembly of claim 24, wherein the device comprises a transistor die attached to the PCB mounting area.

33. (PREVIOUSLY PRESENTED) The assembly of claim 24, wherein the device comprises a transistor die attached to the PCB mounting area, the transistor die comprising the surface forming the respective portion of the channel.

34. (PREVIOUSLY PRESENTED) The assembly of claim 24, the PCB comprising a plurality of device mounting areas for attaching heat producing devices, the cooling channel having a portion in a vicinity of each mounting area.

35. (CURRENTLY AMENDED) An assembly comprising: a heat-generating device attached to a multi-layer printed circuit board (PCB), and a thermal management system, the thermal management system comprising a heat sink having an interior lumen, the heat sink being separate from the multi-layer PCB, and a coolant circulation loop, wherein one or more parts of the coolant circulation loop are at least partially formed in a layer of the multi-layer PCB, the coolant circulation loop being in communication with the heat sink lumen, and a pump arranged separate from the PCB for circulating a coolant through the ~~channel~~coolant circulation loop, wherein the interior lumen of the heat sink forms another portion of the coolant circulation loop.

36. (CANCELED)

37. (PREVIOUSLY PRESENTED) The assembly of claim 35, wherein a portion of the channel is formed by coinciding vias located in adjacent layers of the multi-layer PCB.

38. (PREVIOUSLY PRESENTED) The assembly of claim 35, wherein the channel carries a gas coolant.

39. (PREVIOUSLY PRESENTED) The assembly of claim 35, wherein the channel carries a liquid coolant.

40. (PREVIOUSLY PRESENTED) The assembly of claim 35, wherein the channel comprises walls defining the channel and one wall of a portion of the channel is formed by a surface of the device, so as to provide direct contact between the device and a coolant carried in the channel.

41. (PREVIOUSLY PRESENTED) The assembly of claim 35, wherein the device comprises a transistor die attached to a mounting flange, the mounting flange attached to the mounting area and comprising the surface forming the respective portion of the channel.

42. (PREVIOUSLY PRESENTED) The assembly of claim 35, wherein the device comprises a transistor die attached to the mounting area.

43. (PREVIOUSLY PRESENTED) The assembly of claim 35, wherein the device comprises a transistor die attached to the mounting area in a layer of the multi-layer PCB, the transistor die comprising the surface forming the respective portion of the channel.

44. (PREVIOUSLY PRESENTED) The assembly of claim 35, the multi-layer PCB comprising a plurality of device mounting areas for attaching heat producing devices on one or more layers of the multi-layer PCB, the cooling channel having a portion in a vicinity of each mounting area.